

Title : OFDM channel estimation and tracking for multiple transmit antennas

Abstract

Multiple Transmit Multiple Receive Orthogonal Frequency Division Multiplexing ('OFDM') comprising generating bit streams and corresponding sets of N frequency domain carrier amplitudes ($\tilde{s}(kN + j)$, $0 \leq j \leq N-1$) modulated as OFDM symbols subsequently to be transmitted from a transmitter, where k is the OFDM symbol number and j indicates the corresponding OFDM carrier number. Affix information is inserted at the transmitter into guard intervals between consecutive time domain OFDM symbols and are used at the receiver to estimate the Channel Impulse Response (\mathbf{H}_{lm}) of the transmission channels, the estimated Channel Impulse Response ($\hat{\mathbf{H}}_{lm}$) being used to demodulate the bit streams in the signals received at the receiver. The affix information is known to the receiver as well as to the transmitter, and is mathematically equivalent to a vector (\mathbf{c}_D) that is common to the time domain OFDM symbols multiplied by at least first weighting factors (α_k) that are different for one time domain OFDM symbol (k) than for another and second weighting factors ($w_i(k)$) that enable one of the transmit antenna means (i) to be distinguished from another.

Figure 1